

SEQUENCE LISTING

<110> Ingraham, Holly A.
Krylova, Irina

<120> Steroidogenic Factor-1 Protein Variants
and Methods of Making Same

<130> 66778-120

<150> US 60/395,371
<151> 2002-07-12

<160> 33

<170> FastSEQ for Windows Version 4.0

<210> 1
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<212> PRT
<213> Mus musculus

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Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro Pro Gln Gln Pro Gly Pro
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Pro Tyr Ser Tyr Pro Glu Pro Phe Ser Gly Gly Pro Asn Val Pro Glu
35 40 45
Leu Ile Leu Gln Leu Leu Gln Leu Glu Pro Glu Glu Asp Gln Val Arg
50 55 60
Ala Arg Ile Val Gly Cys Leu Gln Glu Pro Ala Lys Ser Arg Ser Asp
65 70 75 80
Gln Pro Ala Pro Phe Ser Leu Leu Cys Arg Met Ala Asp Gln Thr Phe
85 90 95
Ile Ser Ile Val Asp Trp Ala Arg Arg Cys Met Val Phe Lys Glu Leu
100 105 110
Glu Val Ala Asp Gln Met Thr Leu Leu Gln Asn Cys Trp Ser Glu Leu
115 120 125
Leu Val Leu Asp His Ile Tyr Arg Gln Val Gln Tyr Gly Lys Glu Asp
130 135 140
Ser Ile Leu Leu Val Ser Gly Gln Glu Val Glu Leu Ser Thr Val Ala
145 150 155 160
Val Gln Ala Gly Gly Leu Leu His Ser Leu Val Leu Arg Ala Gln Glu
165 170 175
Leu Val Leu Gln Leu His Ala Leu Gln Leu Asp Arg Gln Glu Phe Val
180 185 190
Cys Leu Lys Phe Leu Ile Leu Phe Ser Leu Asp Val Lys Phe Ile Asn
195 200 205
Asn His Ser Leu Val Lys Asp Ala Gln Glu Lys Ala Asn Ala Ala Leu
210 215 220

Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys Gly Asp Lys Phe Gln
225 230 235 240
Gln Leu Leu Cys Leu Val Glu Val Arg Ala Leu Ser Met Gln Ala Lys
245 250 255
Glu Tyr Leu Tyr His Lys His Leu Gly Asn Glu Met Pro Arg Asn Asn
260 265 270
Leu Leu Ile Glu Met Leu Gln Ala Lys Gln Thr
275 280

<210> 2
<211> 288
<212> PRT
<213> Homo sapiens

<400> 2
Pro Leu Ala Gly Tyr Leu Tyr Pro Ala Phe Pro Gly Pro Ala Ile Lys
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Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro Pro Gln Pro Gly Leu Pro
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Tyr Gly Tyr Pro Glu Pro Phe Ser Gly Gly Pro Asn Val Pro Glu Leu
35 40 45
Ile Leu Gln Leu Leu Gln Leu Glu Pro Asp Glu Asp Gln Val Arg Ala
50 55 60
Arg Ile Leu Gly Cys Leu Gln Glu Pro Thr Lys Ser Arg Pro Asp Gln
65 70 75 80
Pro Ala Ala Phe Gly Leu Leu Cys Arg Met Ala Asp Gln Thr Phe Ile
85 90 95
Ser Ile Val Asp Trp Ala Arg Arg Cys Met Val Phe Lys Glu Leu Glu
100 105 110
Val Ala Asp Gln Met Thr Leu Leu Gln Asn Cys Trp Ser Glu Leu Leu
115 120 125
Val Phe Asp His Ile Tyr Arg Gln Val Gln His Gly Lys Glu Gly Ser
130 135 140
Ile Leu Leu Val Thr Gly Gln Glu Val Glu Leu Thr Thr Val Ala Thr
145 150 155 160
Gln Ala Gly Ser Leu Leu His Ser Leu Val Leu Arg Ala Gln Glu Leu
165 170 175
Val Leu Gln Leu Leu Ala Leu Gln Leu Asp Arg Gln Glu Phe Val Cys
180 185 190
Leu Lys Phe Val Cys Leu Lys Phe Ile Ile Leu Phe Ser Leu Asp Leu
195 200 205
Lys Phe Ile Asn Asn His Ile Leu Val Lys Asp Ala Gln Glu Lys Ala
210 215 220
Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys Gly
225 230 235 240
Asp Lys Phe Gln Gln Leu Leu Cys Leu Val Glu Val Arg Ala Leu
245 250 255
Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His Leu Gly Asn Glu
260 265 270
Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln Ala Lys Gln Thr
275 280 285

<210> 3
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<212> PRT
<213> Mus musculus

<400> 3

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| Ser | Leu | His | Gly | Tyr | Gln | Pro | Tyr | Gly | His | Phe | Pro | Ser | Arg | Ala | Ile |
| 1 | | | | | | | | | 10 | | | | | | 15 |
| Lys | Ser | Glu | Tyr | Pro | Asp | Pro | Tyr | Ser | Ser | Ser | Pro | Glu | Ser | Met | Met |
| | | | | | | | | | 25 | | | | | | 30 |
| Gly | Tyr | Ser | Tyr | Met | Asp | Gly | Tyr | Gln | Thr | Asn | Ser | Pro | Ala | Ser | Ile |
| | | | | | | | | | 40 | | | | | | 45 |
| Pro | Leu | Leu | Ile | Leu | Glu | Leu | Leu | Lys | Cys | Glu | Pro | Asp | Glu | Pro | Gln |
| | | | | | | | | | 55 | | | | | | 60 |
| Val | Gln | Ala | Lys | Ile | Met | Ala | Tyr | Leu | Gln | Gln | Glu | Gln | Ser | Asn | Arg |
| | | | | | | | | | 70 | | | | | | 80 |
| Asn | Arg | Gln | Glu | Lys | Leu | Ser | Ala | Phe | Gly | Leu | Leu | Cys | Arg | Met | Ala |
| | | | | | | | | | 85 | | | | | | 95 |
| Asp | Gln | Thr | Leu | Phe | Ser | Ile | Val | Glu | Trp | Ala | Arg | Ser | Ser | Ile | Phe |
| | | | | | | | | | 100 | | | | | | 110 |
| Phe | Arg | Glu | Leu | Lys | Val | Asp | Asp | Gln | Met | Lys | Leu | Leu | Gln | Asn | Cys |
| | | | | | | | | | 115 | | | | | | 125 |
| Trp | Ser | Glu | Leu | Leu | Ile | Leu | Asp | His | Ile | Thr | Arg | Gln | Val | Ala | His |
| | | | | | | | | | 130 | | | | | | 140 |
| Gly | Lys | Glu | Gly | Thr | Ile | Phe | Leu | Val | Thr | Gly | Glu | His | Val | Asp | Tyr |
| | | | | | | | | | 145 | | | | | | 160 |
| Ser | Thr | Ile | Ile | Ser | His | Thr | Glu | Val | Ala | Arg | Asn | Asn | Leu | Leu | Ser |
| | | | | | | | | | 165 | | | | | | 175 |
| Leu | Ala | Gln | Glu | Leu | Val | Val | Arg | Leu | Arg | Ser | Leu | Gln | Glu | Asp | Gln |
| | | | | | | | | | 180 | | | | | | 190 |
| Arg | Glu | Glu | Val | Cys | Leu | Lys | Phe | Leu | Val | Leu | Phe | Ser | Ser | Asp | Val |
| | | | | | | | | | 195 | | | | | | 205 |
| Phe | Asn | Leu | Glu | Asn | Leu | Gln | Leu | Val | Glu | Gly | Val | Gln | Glu | Gln | Val |
| | | | | | | | | | 210 | | | | | | 220 |
| Asn | Ala | Ala | Leu | Leu | Asp | Tyr | Thr | Val | Cys | Asn | Tyr | Pro | Gln | Gln | Thr |
| | | | | | | | | | 225 | | | | | | 240 |
| Glu | Lys | Phe | Gly | Gln | Leu | Leu | Leu | Arg | Leu | Pro | Glu | Ile | Arg | Ala | Ile |
| | | | | | | | | | 245 | | | | | | 255 |
| Ser | Lys | Gln | Ala | Glu | Asp | Tyr | Leu | Tyr | Tyr | Lys | His | Val | Asn | Gly | Asp |
| | | | | | | | | | 260 | | | | | | 270 |
| Val | Pro | Tyr | Met | Asn | Leu | Leu | Ile | Glu | Met | Leu | His | Ala | Lys | Arg | Ala |
| | | | | | | | | | 275 | | | | | | 285 |

<210> 4
<211> 286
<212> PRT
<213> Homo sapiens

<400> 4

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Gln | Gly | Thr | Gln | Thr | Tyr | Gly | His | Phe | Pro | Ser | Arg | Ala | Ile |
| 1 | | | | | | | | | 10 | | | | | | 15 |

Lys Ser Glu Tyr Pro Asp Pro Tyr Thr Ser Ser Pro Glu Ser Met Gly
20 25 30
Tyr Ser Tyr Met Asp Ser Tyr Gln Thr Ser Ser Pro Ala Ser Ile Pro
35 40 45
His Leu Ile Leu Glu Leu Leu Lys Cys Glu Pro Asp Glu Pro Gln Val
50 55 60
Gln Ala Lys Ile Met Ala Tyr Leu Gln Gln Glu Gln Ala Asn Arg Ser
65 70 75 80
Lys His Glu Lys Leu Ser Thr Phe Gly Ile Met Cys Arg Met Ala Asp
85 90 95
Gln Thr Leu Phe Ser Ile Val Glu Trp Ala Arg Ser Ser Ile Phe Phe
100 105 110
Arg Glu Leu Lys Val Asp Asp Gln Met Lys Leu Leu Gln Asn Cys Trp
115 120 125
Ser Glu Leu Leu Ile Leu Asp His Ile Tyr Arg Gln Val Val His Gly
130 135 140
Lys Glu Gly Ser Ile Phe Leu Val Thr Gly Gln Gln Val Asp Tyr Ser
145 150 155 160
Ile Ile Ala Ser Gln Ala Gly Ala Thr Ile Asn Asn Ile Met Ser His
165 170 175
Ala Gln Glu Leu Val Lys Leu Arg Ser Leu Gln Glu Asp Gln Arg Glu
180 185 190
Phe Val Cys Leu Lys Phe Leu Val Leu Phe Ser Leu Asp Val Phe Asn
195 200 205
Leu Glu Asn Phe Gln Leu Val Glu Gly Val Gln Glu Gln Val Asn Ala
210 215 220
Ala Leu Leu Asp Tyr Thr Met Cys Asn Tyr Pro Gln Gln Thr Glu Lys
225 230 235 240
Phe Gly Gln Leu Leu Leu Arg Leu Pro Glu Ile Arg Ala Ile Ser Met
245 250 255
Gln Ala Glu Glu Tyr Leu Tyr Tyr Lys His Ile Asn Gly Asp Val Pro
260 265 270
Tyr Asn Asn Leu Leu Ile Glu Met Leu His Ala Lys Arg Ala
275 280 285

<210> 5
<211> 260
<212> PRT
<213> Homo sapiens

<400> 5
Lys Arg Glu Ala Val Gln Glu Glu Arg Gln Arg Gly Lys Asp Arg Asn
1 5 10 15
Glu Asn Glu Val Glu Ser Thr Ser Ser Ala Asn Glu Cys Met Pro Val
20 25 30
Glu Arg Ile Leu Glu Ala Glu Leu Ala Val Glu Pro Lys Thr Glu Thr
35 40 45
Tyr Val Glu Ala Asn Met Gly Ile Asn Pro Ser Ser Pro Asn Asp Pro
50 55 60
Val Thr Asn Ile Cys Gln Ala Ala Asp Lys Gln Leu Phe Thr Leu Val
65 70 75 80
Glu Trp Ala Lys Arg Ile Pro His Phe Ser Glu Leu Pro Leu Asp Asp

| | | |
|-----------------------------------------------------------------|-----|-----|
| 85 | 90 | 95 |
| Gln Val Ile Leu Leu Arg Ala Gly Trp Asn Glu Leu Leu Ile Ala Ser | | |
| 100 | 105 | 110 |
| Phe Ser His Arg Ser Leu Ala Val Lys Asp Gly Ile Leu Leu Ala Thr | | |
| 115 | 120 | 125 |
| Gly Leu His Val His Gly Asn Ser Ala His Ser Ala Gly Val Gly Ala | | |
| 130 | 135 | 140 |
| Ile Phe Asp Arg Val Leu Thr Glu Leu Val Ser Lys Met Arg Asp Met | | |
| 145 | 150 | 155 |
| Gln Met Asp Lys Thr Glu Leu Gly Cys Leu Arg Ala Ile Val Leu Arg | | |
| 165 | 170 | 175 |
| Asn Pro Asp Ser Lys Gly Leu Ser Asn Pro Ala Glu Val Glu Ala Leu | | |
| 180 | 185 | 190 |
| Arg Glu Lys Val Tyr Ala Ser Leu Glu Ala Tyr Cys Lys His Lys Tyr | | |
| 195 | 200 | 205 |
| Pro Glu Gln Pro Gly Arg Phe Ala Lys Ile Leu Leu Arg Leu Pro Ala | | |
| 210 | 215 | 220 |
| Leu Arg Ser Ile Gly Leu Lys Cys Leu Glu His Leu Phe Phe Lys | | |
| 225 | 230 | 235 |
| Leu Ile Gly Asp Thr Pro Ile Asp Thr Phe Ile Met Glu Met Leu Glu | | |
| 245 | 250 | 255 |
| Ala Pro His Gln | | |
| 260 | | |

<210> 6
<211> 1389
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1) ... (1389)

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atg gac tac tcg tac gac gag gac ctg gac gag ctg tgt cca gtg tgt 48
Met Asp Tyr Ser Tyr Asp Glu Asp Leu Asp Glu Leu Cys Pro Val Cys
1 5 10 15

ggt gac aag gtg tcg ggc tac cac tac ggg ctg ctc acg tgc gag agc 96
Gly Asp Lys Val Ser Gly Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser
20 25 30

tgc aag ggc ttc ttc aag cgc aca gtc cag aac aag cat tac acg 144
Cys Lys Gly Phe Phe Lys Arg Thr Val Gln Asn Asn Lys His Tyr Thr
35 40 45

tgc acc gag agt cag agc tgc aaa atc gac aag acg cag cgt aag cgc 192
Cys Thr Glu Ser Gln Ser Cys Lys Ile Asp Lys Thr Gln Arg Lys Arg
50 55 60

tgt ccc ttc tgc cgc ttc cag aag tgc ctg acg gtg ggc atg cgc ctg 240
Cys Pro Phe Cys Arg Phe Gln Lys Cys Leu Thr Val Gly Met Arg Leu

| 65 | 70 | 75 | 80 | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|-----|-----|
| gaa gct gtg cgt gct gat cga atg cg ^g ggt ggc cg ^g aac aag ttt ggg Glu Ala Val Arg Ala Asp Arg Met Arg Gly Gly Arg Asn Lys Phe Gly | | | | 288 |
| 85 | 90 | | 95 | |
| ccc atg tac aag aga gac cg ^g gcc ttg aag cag cag aag aaa gca cag Pro Met Tyr Lys Arg Asp Arg Ala Leu Lys Gln Gln Lys Lys Ala Gln | | | | 336 |
| 100 | 105 | | 110 | |
| att cg ^g gcc aat ggc ttc aag ctg gag acc gga cca cc ^g atg ggg gtg Ile Arg Ala Asn Gly Phe Lys Leu Glu Thr Gly Pro Pro Met Gly Val | | | | 384 |
| 115 | 120 | | 125 | |
| ccc ccg cca ccc cct ccc cca cc ^g gac tac atg tta ccc cct agc ctg Pro Pro Pro Pro Pro Pro Pro Asp Tyr Met Leu Pro Pro Ser Leu | | | | 432 |
| 130 | 135 | | 140 | |
| cac gca ccg gag ccc aag gcc ctg gtc tct ggc cca ccc agt ggg cc ^g His Ala Pro Glu Pro Lys Ala Leu Val Ser Gly Pro Pro Ser Gly Pro | | | | 480 |
| 145 | 150 | | 155 | |
| 160 | | | | |
| ctg ggt gac ttt gga gcc cca tct cta ccc atg gct gtg cct ggt ccc Leu Gly Asp Phe Gly Ala Pro Ser Leu Pro Met Ala Val Pro Gly Pro | | | | 528 |
| 165 | 170 | | 175 | |
| cac gga cct ctg gct ggc tac ctc tat cct gcc ttc tct aac cgc acc His Gly Pro Leu Ala Gly Tyr Leu Tyr Pro Ala Phe Ser Asn Arg Thr | | | | 576 |
| 180 | 185 | | 190 | |
| atc aag tct gag tat cca gag ccc tat gcc agc ccc cca caa cag cca Ile Lys Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro Pro Gln Gln Pro | | | | 624 |
| 195 | 200 | | 205 | |
| ggg cca ccc tac agc tat cca gag ccc ttc tca gga ggg ccc aat gta Gly Pro Pro Tyr Ser Tyr Pro Glu Pro Phe Ser Gly Gly Pro Asn Val | | | | 672 |
| 210 | 215 | | 220 | |
| cca gag ctc ata ttg cag ctg ctg caa cta gag cca gag gag gac cag Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu Glu Pro Glu Glu Asp Gln | | | | 720 |
| 225 | 230 | | 235 | |
| 240 | | | | |
| gtg cgc gct cgc atc gtg ggc tgt ctg cag gag cca gcc aaa agc cgc Val Arg Ala Arg Ile Val Gly Cys Leu Gln Glu Pro Ala Lys Ser Arg | | | | 768 |
| 245 | 250 | | 255 | |
| tct gac cag cca gc ^g ccc ttc agc ctc ctc tgc aga atg gcc gac cag Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu Cys Arg Met Ala Asp Gln | | | | 816 |
| 260 | 265 | | 270 | |
| acc ttt atc tcc att gtc gac tgg gca cga agg tgc atg gtc ttt aag Thr Phe Ile Ser Ile Val Asp Trp Ala Arg Arg Cys Met Val Phe Lys | | | | 864 |
| 275 | 280 | | 285 | |

| | |
|------------------------------------------------------------------------------------------------------------------------------------|------|
| gag ctg gag gtg gct gac cag atg aca ctg ctg cag aac tgt tgg agc Glu Leu Glu Val Ala Asp Gln Met Thr Leu Leu Gln Asn Cys Trp Ser | 912 |
| 290 295 300 | |
| gag ctg ctg gtg ttg gac cac atc tac cgc cag gtc cag tac ggc aag Glu Leu Leu Val Leu Asp His Ile Tyr Arg Gln Val Gln Tyr Gly Lys | 960 |
| 305 310 315 320 | |
| gaa gac agc atc ctg ctg gtt act gga cag gag gtg gag ctg agc aca Glu Asp Ser Ile Leu Leu Val Thr Gly Gln Glu Val Glu Leu Ser Thr | 1008 |
| 325 . 330 335 | |
| gtg gct gtg cag gct ggc tcc ctg ctg cac agc ctg gtg ctg cgg gcc Val Ala Val Gln Ala Gly Ser Leu Leu His Ser Leu Val Leu Arg Ala | 1056 |
| 340 345 350 | |
| caa gag tta gtg ctc cag ttg cat gca ctg cag ctg gac cgc cag gag Gln Glu Leu Val Leu Gln Leu His Ala Leu Gln Leu Asp Arg Gln Glu | 1104 |
| 355 360 365 | |
| ttc gtc tgt ctc aag ttc ctc atc ctc ttc agc ctc gat gtg aaa ttc Phe Val Cys Leu Lys Phe Leu Ile Leu Phe Ser Leu Asp Val Lys Phe | 1152 |
| 370 375 380 | |
| ctg aac aac cac agc ctc gta aag gac gcc cag gaa aag gcc aac gct Leu Asn Asn His Ser Leu Val Lys Asp Ala Gln Glu Lys Ala Asn Ala | 1200 |
| 385 390 395 400 | |
| gcc ctg ttg gat tac acc ttg tgt cac tac cca cac tgc ggg gac aaa Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys Gly Asp Lys | 1248 |
| 405 410 415 | |
| ttc cag cag ttg cta ttg tgc ctg gtg gag gtg cgg gcc ctg agc atg Phe Gln Gln Leu Leu Cys Leu Val Glu Val Arg Ala Leu Ser Met | 1296 |
| 420 425 430 | |
| cag gcc aag gag tac ctg tac cac aag cat ttg ggc aac gag atg ccc Gln Ala Lys Glu Tyr Leu Tyr His Lys His Leu Gly Asn Glu Met Pro | 1344 |
| 435 440 445 | |
| cgc aac aac ctt ctc att gag atg ctg cag gcc aag cag act tga Arg Asn Asn Leu Leu Ile Glu Met Leu Gln Ala Lys Gln Thr * | 1389 |
| 450 455 460 | |

<210> 7
<211> 462
<212> PRT
<213> Mus musculus

<400> 7

Met Asp Tyr Ser Tyr Asp Glu Asp Leu Asp Glu Leu Cys Pro Val Cys
1 5 10 15
Gly Asp Lys Val Ser Gly Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser
20 25 30
Cys Lys Gly Phe Phe Lys Arg Thr Val Gln Asn Asn Lys His Tyr Thr
35 40 45
Cys Thr Glu Ser Gln Ser Cys Lys Ile Asp Lys Thr Gln Arg Lys Arg
50 55 60
Cys Pro Phe Cys Arg Phe Gln Lys Cys Leu Thr Val Gly Met Arg Leu
65 70 75 80
Glu Ala Val Arg Ala Asp Arg Met Arg Gly Gly Arg Asn Lys Phe Gly
85 90 95
Pro Met Tyr Lys Arg Asp Arg Ala Leu Lys Gln Gln Lys Lys Ala Gln
100 105 110
Ile Arg Ala Asn Gly Phe Lys Leu Glu Thr Gly Pro Pro Met Gly Val
115 120 125
Pro Pro Pro Pro Pro Pro Pro Asp Tyr Met Leu Pro Pro Ser Leu
130 135 140
His Ala Pro Glu Pro Lys Ala Leu Val Ser Gly Pro Pro Ser Gly Pro
145 150 155 160
Leu Gly Asp Phe Gly Ala Pro Ser Leu Pro Met Ala Val Pro Gly Pro
165 170 175
His Gly Pro Leu Ala Gly Tyr Leu Tyr Pro Ala Phe Ser Asn Arg Thr
180 185 190
Ile Lys Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro Pro Gln Gln Pro
195 200 205
Gly Pro Pro Tyr Ser Tyr Pro Glu Pro Phe Ser Gly Gly Pro Asn Val
210 215 220
Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu Glu Pro Glu Glu Asp Gln
225 230 235 240
Val Arg Ala Arg Ile Val Gly Cys Leu Gln Glu Pro Ala Lys Ser Arg
245 250 255
Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu Cys Arg Met Ala Asp Gln
260 265 270
Thr Phe Ile Ser Ile Val Asp Trp Ala Arg Arg Cys Met Val Phe Lys
275 280 285
Glu Leu Glu Val Ala Asp Gln Met Thr Leu Leu Gln Asn Cys Trp Ser
290 295 300
Glu Leu Leu Val Leu Asp His Ile Tyr Arg Gln Val Gln Tyr Gly Lys
305 310 315 320
Glu Asp Ser Ile Leu Leu Val Thr Gly Gln Glu Val Glu Leu Ser Thr
325 330 335
Val Ala Val Gln Ala Gly Ser Leu Leu His Ser Leu Val Leu Arg Ala
340 345 350
Gln Glu Leu Val Leu Gln Leu His Ala Leu Gln Leu Asp Arg Gln Glu
355 360 365
Phe Val Cys Leu Lys Phe Leu Ile Leu Phe Ser Leu Asp Val Lys Phe
370 375 380
Leu Asn Asn His Ser Leu Val Lys Asp Ala Gln Glu Lys Ala Asn Ala
385 390 395 400
Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys Gly Asp Lys
405 410 415
Phe Gln Gln Leu Leu Cys Leu Val Glu Val Arg Ala Leu Ser Met

| | | |
|---------------------------------------------------------------------|-----|-----|
| 420 | 425 | 430 |
| Gln Ala Lys Glu Tyr Leu Tyr His Lys His His Leu Gly Asn Glu Met Pro | | |
| 435 | 440 | 445 |
| Arg Asn Asn Leu Leu Ile Glu Met Leu Gln Ala Lys Gln Thr | | |
| 450 | 455 | 460 |

<210> 8
<211> 1895
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (16) ... (1401)

<400> 8
gcggacgccc cgggc atg gac tat tcg tac gac gag gac ctg gac gag ctg 51
Met Asp Tyr Ser Tyr Asp Glu Asp Leu Asp Glu Leu
1 5 10

tgc ccc gtg tgc ggg gac aag gtg tcc ggc tac cac tac gga ctg ctc 99
Cys Pro Val Cys Gly Asp Lys Val Ser Gly Tyr His Tyr Gly Leu Leu
15 20 25

acg tgt gag agc tgc aag ggc ttc ttc aag cgc acg gtg cag aac aac 147
Thr Cys Glu Ser Cys Lys Gly Phe Phe Lys Arg Thr Val Gln Asn Asn
30 35 40

aag cac tac acg tgc acc gag agc cag acg tgc aag atc gac aag acg 195
Lys His Tyr Thr Cys Thr Glu Ser Gln Ser Cys Lys Ile Asp Lys Thr
45 50 55 60

cag cgc aag cgc tgt ccc ttc tgc cgc ttc cag aaa tgc ctg acg gtg 243
Gln Arg Lys Arg Cys Pro Phe Cys Arg Phe Gln Lys Cys Leu Thr Val
65 70 75

ggg atg cgc ctg gaa gcc gtg cgc gct gac cgt atg agg ggt ggc cgg 291
Gly Met Arg Leu Glu Ala Val Arg Ala Asp Arg Met Arg Gly Gly Arg
80 85 90

aac aag ttt ggg ccg atg tac aag cgg gac cgg gcc ctg aaa cag cag 339
Asn Lys Phe Gly Pro Met Tyr Lys Arg Asp Arg Ala Leu Lys Gln Gln
95 100 105

aag aag gca cag att cgg gcc aat ggc ttc aag ctg gag aca ggg ccc 387
Lys Lys Ala Gln Ile Arg Ala Asn Gly Phe Lys Leu Glu Thr Gly Pro
110 115 120

ccg atg ggg gtg ccc ccg ccc cct ccc gca ccg gac tac gtg ctg 435
Pro Met Gly Val Pro Pro Pro Pro Pro Ala Pro Asp Tyr Val Leu
125 130 135 140

cct ccc agc ctg cat ggg cct gag ccc aag ggc ctg gcc gcc ggt cca 483
Pro Pro Ser Leu His Gly Pro Glu Pro Lys Gly Leu Ala Ala Gly Pro
145 150 155

cct gct ggg cca ctg ggc gac ttt ggg gcc cca gca ctg ccc atg gcc 531
Pro Ala Gly Pro Leu Gly Asp Phe Gly Ala Pro Ala Leu Pro Met Ala
160 165 170

gtg ccc ggt gcc cac ggg cca ctg gct ggc tac ctc tac cct gcc ttt 579
Val Pro Gly Ala His Gly Pro Leu Ala Gly Tyr Leu Tyr Pro Ala Phe
175 180 185

cct ggc cgt gcc atc aag tct gag tac ccg gag cct tat gcc agc ccc 627
Pro Gly Arg Ala Ile Lys Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro
190 195 200

cca cag cct ggg ctg ccg tac ggc tac cca gag ccc ttc tct gga ggc 675
Pro Gln Pro Gly Leu Pro Tyr Gly Tyr Pro Glu Pro Phe Ser Gly Gly
205 210 215 220

ccc aac gtg cct gag ctc atc ctg cag ctg cag ctg gag ccg gat 723
Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu Glu Pro Asp
225 230 235

gag gac cag gtg cgg gcc cgc atc ttg ggc tgc ctg cag gag ccc acc 771
Glu Asp Gln Val Arg Ala Arg Ile Leu Gly Cys Leu Gln Glu Pro Thr
240 245 250

aaa agc cgc ccc gac cag ccg gcg gcc ttc ggc ctc ctg tgc aga atg 819
Lys Ser Arg Pro Asp Gln Pro Ala Ala Phe Gly Leu Leu Cys Arg Met
255 260 265

gcc gac cag acc ttc atc tcc atc gtg gac tgg gca cgc agg tgc atg 867
Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg Arg Cys Met
270 275 280

gtc ttc aag gag ctg gag gtg gcc gac cag atg acg ctg ctg cag aac 915
Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu Leu Gln Asn
285 290 295 300

tgc tgg agc gag ctg ctg gtg ttc gac cac atc tac cgc cag gtc cag 963
Cys Trp Ser Glu Leu Leu Val Phe Asp His Ile Tyr Arg Gln Val Gln
305 310 315

cac ggc aag gag ggc agc atc ctg ctg gtc acc ggg cag gag gtg gag 1011
His Gly Lys Glu Gly Ser Ile Leu Leu Val Thr Gly Gln Glu Val Glu
320 325 330

ctg acc aca gtg gcc acc cag gcg ggc tcg ctg ctg cac agc ctg gtg 1059
Leu Thr Thr Val Ala Thr Gln Ala Gly Ser Leu Leu His Ser Leu Val
335 340 345

ttg cgg gcg cag gag ctg gtg ctg cag ctg ctt gcg ctg cag ctg gac 1107

| | | | | |
|-----------------------------------------------------------------|------|-----|-----|------|
| Leu Arg Ala Gln Glu Leu Val Leu Gln Leu Leu Ala Leu Gln Leu Asp | | | | |
| 350 | 355 | 360 | | |
| cgg cag gag ttt gtc tgc ctc aag ttc atc atc ctc ttc agc ctg gat | | | | 1155 |
| Arg Gln Glu Phe Val Cys Leu Lys Phe Ile Ile Leu Phe Ser Leu Asp | | | | |
| 365 | 370, | 375 | 380 | |
| ttg aag ttc ctg aat aac cac atc ctg gtg aaa gac gct cag gag aag | | | | 1203 |
| Leu Lys Phe Leu Asn Asn His Ile Leu Val Lys Asp Ala Gln Glu Lys | | | | |
| 385 | 390 | 395 | | |
| gcc aac gcc gcc ctg ctt gac tac acc ctg tgc cac tac ccg cac tgc | | | | 1251 |
| Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys | | | | |
| 400 | 405 | 410 | | |
| ggg gac aaa ttc cag cag ctg ctg tgc ctg gtg gag gtg cgg gcc | | | | 1299 |
| Gly Asp Lys Phe Gln Gln Leu Leu Cys Leu Val Glu Val Arg Ala | | | | |
| 415 | 420 | 425 | | |
| ctg agc atg cag gcc aag gag tac ctg tac cac aag cac ctg ggc aac | | | | 1347 |
| Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His Leu Gly Asn | | | | |
| 430 | 435 | 440 | | |
| gag atg ccc cgc aac aac ctg ctc atc gaa atg ctg caa gcc aag cag | | | | 1395 |
| Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln Ala Lys Gln | | | | |
| 445 | 450 | 455 | 460 | |
| act tga gcctggggccg gggggggggc cgggactggg ggccggactg gggggggggc | | | | |
| Thr * | | | | 1451 |

ctgggcgggg ccgcagccac accgctggct ccgcatggtt catttctga tgcccaccca 1511
ggagccccag ccccgtaacc gaggccgctg cccctgagtt ctgacactgt gtgttggga 1571
aggtgggtga ggctgggcag ggcctggcgg aggtggagtg gccactggca cttgcctgct 1631
gcttggagtg ccccaaggag gtggctgtta accacccgc accgcggccctc cctgctccca 1691
gctctctctc ctggagtctg aagcctgcag gtccggggag gaggttcggg attcccttgt 1751
gggcctcgac gtcccttgaa tcagaggtca tcccttcctc ctctcctgga aacagacagg 1811
gagaagttga gcaggttatca actaggggag gagagaggggt ctccagtgtt ccccccata 1871
aagaccaggaaq qqaqaaqcctc tqtt 1895

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<210> 9  
<211> 461  
<212> PRT  
<213> Homo sapiens
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<400> 9
Met Asp Tyr Ser Tyr Asp Glu Asp Leu Asp Glu Leu Cys Pro Val Cys
   1           5           10          15
Gly Asp Lys Val Ser Gly Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser
   20          25          30
Cys Lys Gly Phe Phe Lys Arg Thr Val Gln Asn Asn Lys His Tyr Thr
   35          40          45
Cys Thr Glu Ser Gln Ser Cys Lys Ile Asp Lys Thr Gln Arg Lys Arg

```

| | | |
|-----------------------------------------------------------------|-----|-----|
| 50 | 55 | 60 |
| Cys Pro Phe Cys Arg Phe Gln Lys Cys Leu Thr Val Gly Met Arg Leu | | |
| 65 | 70 | 75 |
| Glu Ala Val Arg Ala Asp Arg Met Arg Gly Gly Arg Asn Lys Phe Gly | | 80 |
| 85 | 90 | 95 |
| Pro Met Tyr Lys Arg Asp Arg Ala Leu Lys Gln Gln Lys Lys Ala Gln | | |
| 100 | 105 | 110 |
| Ile Arg Ala Asn Gly Phe Lys Leu Glu Thr Gly Pro Pro Met Gly Val | | |
| 115 | 120 | 125 |
| Pro Pro Pro Pro Pro Ala Pro Asp Tyr Val Leu Pro Pro Ser Leu | | |
| 130 | 135 | 140 |
| His Gly Pro Glu Pro Lys Gly Leu Ala Ala Gly Pro Pro Ala Gly Pro | | |
| 145 | 150 | 155 |
| Leu Gly Asp Phe Gly Ala Pro Ala Leu Pro Met Ala Val Pro Gly Ala | | 160 |
| 165 | 170 | 175 |
| His Gly Pro Leu Ala Gly Tyr Leu Tyr Pro Ala Phe Pro Gly Arg Ala | | |
| 180 | 185 | 190 |
| Ile Lys Ser Glu Tyr Pro Glu Pro Tyr Ala Ser Pro Pro Gln Pro Gly | | |
| 195 | 200 | 205 |
| Leu Pro Tyr Gly Tyr Pro Glu Pro Phe Ser Gly Gly Pro Asn Val Pro | | |
| 210 | 215 | 220 |
| Glu Leu Ile Leu Gln Leu Leu Gln Leu Glu Pro Asp Glu Asp Gln Val | | |
| 225 | 230 | 235 |
| Arg Ala Arg Ile Leu Gly Cys Leu Gln Glu Pro Thr Lys Ser Arg Pro | | |
| 245 | 250 | 255 |
| Asp Gln Pro Ala Ala Phe Gly Leu Leu Cys Arg Met Ala Asp Gln Thr | | |
| 260 | 265 | 270 |
| Phe Ile Ser Ile Val Asp Trp Ala Arg Arg Cys Met Val Phe Lys Glu | | |
| 275 | 280 | 285 |
| Leu Glu Val Ala Asp Gln Met Thr Leu Leu Gln Asn Cys Trp Ser Glu | | |
| 290 | 295 | 300 |
| Leu Leu Val Phe Asp His Ile Tyr Arg Gln Val Gln His Gly Lys Glu | | |
| 305 | 310 | 315 |
| Gly Ser Ile Leu Leu Val Thr Gly Gln Glu Val Glu Leu Thr Thr Val | | |
| 325 | 330 | 335 |
| Ala Thr Gln Ala Gly Ser Leu Leu His Ser Leu Val Leu Arg Ala Gln | | |
| 340 | 345 | 350 |
| Glu Leu Val Leu Gln Leu Leu Ala Leu Gln Leu Asp Arg Gln Glu Phe | | |
| 355 | 360 | 365 |
| Val Cys Leu Lys Phe Ile Ile Leu Phe Ser Leu Asp Leu Lys Phe Leu | | |
| 370 | 375 | 380 |
| Asn Asn His Ile Leu Val Lys Asp Ala Gln Glu Lys Ala Asn Ala Ala | | |
| 385 | 390 | 395 |
| Leu Leu Asp Tyr Thr Leu Cys His Tyr Pro His Cys Gly Asp Lys Phe | | |
| 405 | 410 | 415 |
| Gln Gln Leu Leu Leu Cys Leu Val Glu Val Arg Ala Leu Ser Met Gln | | |
| 420 | 425 | 430 |
| Ala Lys Glu Tyr Leu Tyr His Lys His Leu Gly Asn Glu Met Pro Arg | | |
| 435 | 440 | 445 |
| Asn Asn Leu Leu Ile Glu Met Leu Gln Ala Lys Gln Thr | | |
| 450 | 455 | 460 |

<210> 10
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<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (159) ... (1841)

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tttccttccc aaagtaccaa aatatgacaa gctcaatct ttctcacatt caatgattc 120
tgctgttaagc caaaggactg ccaataattt cgctaaga atg tct gct agt ttg gat 176
Met Ser Ala Ser Leu Asp
1 5

act gga gat ttt caa gaa ttt ctt aag cat gga ctt aca gct att gcg 224
Thr Gly Asp Phe Gln Glu Phe Leu Lys His Gly Leu Thr Ala Ile Ala
10 15 20

tct gca cca ggg tca gag act cgc cac tcc ccc aaa cgt gag gaa caa 272
Ser Ala Pro Gly Ser Glu Thr Arg His Ser Pro Lys Arg Glu Glu Gln
25 30 35

ctc cg gaa aaa cgt gct ggg ctt ccg gac cga cac cga cgc ccc att 320
Leu Arg Glu Lys Arg Ala Gly Leu Pro Asp Arg His Arg Arg Pro Ile
40 45 50

ccc gcc cgc agc cgc ctt gtc atg ctg ccc aaa gtg gag acg gaa gcc 368
Pro Ala Arg Ser Arg Leu Val Met Leu Pro Lys Val Glu Thr Glu Ala
55 60 65 70

cca gga ctg gtc cga tcg cat ggg gaa cag ggg cag atg cca gaa aac 416
Pro Gly Leu Val Arg Ser His Gly Glu Gln Gly Gln Met Pro Glu Asn
75 80 85

atg caa gtg tct caa ttt aaa atg gtg aat tac tcc tat gat gaa gat 464
Met Gln Val Ser Gln Phe Lys Met Val Asn Tyr Ser Tyr Asp Glu Asp
90 95 100

ctg gaa gag cta tgt cct gtg tgt ggc gat aaa gtg tct ggg tac cat 512
Leu Glu Leu Cys Pro Val Cys Gly Asp Lys Val Ser Gly Tyr His
105 110 115

tac ggt ctc ctc acg tgc gaa agc tgc aag ggt ttt ttt aag cga act 560
Tyr Gly Leu Leu Thr Cys Glu Ser Cys Lys Gly Phe Phe Lys Arg Thr
120 125 130

gtc caa aac caa aaa agg tac acg tgc ata gag aac cag aat tgc caa 608
Val Gln Asn Gln Lys Arg Tyr Thr Cys Ile Glu Asn Gln Asn Cys Gln
135 140 145 150

att gac aaa acg cag aga aaa cga tgt ccc tac tgt cga ttc aaa aaa 656

| | | | |
|-----------------------------------------------------------------|-----|-----|------|
| Ile Asp Lys Thr Gln Arg Lys Arg Cys Pro Tyr Cys Arg Phe Lys Lys | | | |
| 155 | 160 | 165 | |
| tgt atc gat gtt ggg atg aag ctg gaa gcc gta aga gcc gac cgc atg | | | 704 |
| Cys Ile Asp Val Gly Met Lys Leu Glu Ala Val Arg Ala Asp Arg Met | | | |
| 170 | 175 | 180 | |
| cga ggg ggc aga aat aag ttt ggg cca atg tac aag aga gac agg gct | | | 752 |
| Arg Gly Gly Arg Asn Lys Phe Gly Pro Met Tyr Lys Arg Asp Arg Ala | | | |
| 185 | 190 | 195 | |
| ttg aag cag cag aag aaa gcc ctc att cga gcc aat gga ctt aag ctg | | | 800 |
| Leu Lys Gln Gln Lys Lys Ala Leu Ile Arg Ala Asn Gly Leu Lys Leu | | | |
| 200 | 205 | 210 | |
| gaa gcc atg tct cag gtg atc caa gca atg ccc tca gac ctg acc tct | | | 848 |
| Glu Ala Met Ser Gln Val Ile Gln Ala Met Pro Ser Asp Leu Thr Ser | | | |
| 215 | 220 | 225 | 230 |
| gca att cag aac att cat tcc gcc tcc aaa ggc cta cct ctg agc cat | | | 896 |
| Ala Ile Gln Asn Ile His Ser Ala Ser Lys Gly Leu Pro Leu Ser His | | | |
| 235 | 240 | 245 | |
| gta gcc ttg cct ccg aca gac tat gac aga agt ccc ttt gtc aca tct | | | 944 |
| Val Ala Leu Pro Pro Thr Asp Tyr Asp Arg Ser Pro Phe Val Thr Ser | | | |
| 250 | 255 | 260 | |
| ccc att agc atg aca atg cca cct cac agc agc ctg cat ggt tac caa | | | 992 |
| Pro Ile Ser Met Thr Met Pro Pro His Ser Ser Leu His Gly Tyr Gln | | | |
| 265 | 270 | 275 | |
| ccc tat ggt cac ttt cct agt cgg gcc atc aag tct gag tac cca gac | | | 1040 |
| Pro Tyr Gly His Phe Pro Ser Arg Ala Ile Lys Ser Glu Tyr Pro Asp | | | |
| 280 | 285 | 290 | |
| ccc tac tcc agc tca cct gag tca atg atg ggt tac tcc tac atg gat | | | 1088 |
| Pro Tyr Ser Ser Pro Glu Ser Met Met Gly Tyr Ser Tyr Met Asp | | | |
| 295 | 300 | 305 | 310 |
| ggt tac cag aca aac tcc ccg gcc agc atc cca cac ctg ata ctg gaa | | | 1136 |
| Gly Tyr Gln Thr Asn Ser Pro Ala Ser Ile Pro His Leu Ile Leu Glu | | | |
| 315 | 320 | 325 | |
| ctt ttg aag tgt gaa cca gat gag cct caa gtc aag atc atg | | | 1184 |
| Leu Leu Lys Cys Glu Pro Asp Glu Pro Gln Val Gln Ala Lys Ile Met | | | |
| 330 | 335 | 340 | |
| gct tac ctc cag caa gag cag agt aac cga aac agg caa gaa aag ctg | | | 1232 |
| Ala Tyr Leu Gln Gln Glu Gln Ser Asn Arg Asn Arg Gln Glu Lys Leu | | | |
| 345 | 350 | 355 | |
| agc gca ttt ggg ctt tta tgc aaa atg gcg gac cag acc ctg ttc tcc | | | 1280 |
| Ser Ala Phe Gly Leu Leu Cys Lys Met Ala Asp Gln Thr Leu Phe Ser | | | |

| 360 | 365 | 370 | |
|----------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------|
| att gtt gag tgg gcc agg agt agt atc ttc ttc agg gaa ctg aag gtt Ile Val Glu Trp Ala Arg Ser Ser Ile Phe Phe Arg Glu Leu Lys Val | | | 1328 |
| 375 | 380 | 385 | 390 |
| gat gac caa atg aag ctg ctt caa aac tgc tgg agt gag ctc ttg att Asp Asp Gln Met Lys Leu Leu Gln Asn Cys Trp Ser Glu Leu Leu Ile | | | 1376 |
| 395 | 400 | 405 | |
| ctc gat cac att tac cga caa gtg gcg cat ggg aag gaa ggg aca atc Leu Asp His Ile Tyr Arg Gln Val Ala His Gly Lys Glu Gly Thr Ile | | | 1424 |
| 410 | 415 | 420 | |
| ttc ctg gtt act gga gaa cac gtg gac tac tcc acc atc atc tca cac Phe Leu Val Thr Gly Glu His Val Asp Tyr Ser Thr Ile Ile Ser His | | | 1472 |
| 425 | 430 | 435 | |
| aca gaa gtc gcg ttc aac aac ctc ctg agt ctc gca cag gag ctg gtg Thr Glu Val Ala Phe Asn Asn Leu Leu Ser Leu Ala Gln Glu Leu Val | | | 1520 |
| 440 | 445 | 450 | |
| gtg agg ctc cgt tcc ctt cag ttc gat cag cgg gag ttt gta tgt ctc Val Arg Leu Arg Ser Leu Gln Phe Asp Gln Arg Glu Phe Val Cys Leu | | | 1568 |
| 455 | 460 | 465 | 470 |
| aag ttc ctg gtg ctg ttc agc tca gat gtg aag aac ctg gag aac ctg Lys Phe Leu Val Leu Phe Ser Ser Asp Val Lys Asn Leu Glu Asn Leu | | | 1616 |
| 475 | 480 | 485 | |
| cag ctg gtg gaa ggt gtc caa gag cag gtg aat gcc gcc ctg ctg gac Gln Leu Val Glu Gly Val Gln Glu Gln Val Asn Ala Ala Leu Leu Asp | | | 1664 |
| 490 | 495 | 500 | |
| tac acg gtt tgc aac tac cca caa cag act gag aaa ttc gga cag cta Tyr Thr Val Cys Asn Tyr Pro Gln Gln Thr Glu Lys Phe Gly Gln Leu | | | 1712 |
| 505 | 510 | 515 | |
| ctt ctt cgg cta ccc gag atc cgg gca atc agc aag cag gca gaa gac Leu Leu Arg Leu Pro Glu Ile Arg Ala Ile Ser Lys Gln Ala Glu Asp | | | 1760 |
| 520 | 525 | 530 | |
| tac ctg tac tat aag cac gtg aac ggg gat gtg ccc tat aat aac ctc Tyr Leu Tyr Tyr Lys His Val Asn Gly Asp Val Pro Tyr Asn Asn Leu | | | 1808 |
| 535 | 540 | 545 | 550 |
| ctc att gag atg ctg cat gcc aaa aga gcc taa gtccccaccc ctgaaagctt Leu Ile Glu Met Leu His Ala Lys Arg Ala * | | | 1861 |
| 555 | 560 | | |
| gctcttaggaa cacagactgg aaggagaaga ggaggacgat gacagaaaca caatactctg aactgctcca agcaatgcta attataaact tggttaaag acactgaatt taaaaagcat | | | 1921 |
| aataattaaa tacctaatacg atatatcagg gtattgtac tgcaaactgt | | | 1981 |
| | | | 2041 |

gaatcaaagg ctgtatgaat caaaggattc atatgaaaga cattgtaatg gggttggattg 2101
aacttacaga tggagaccaa taccacagca gaataaaaat ggacagaaca atccctgtat 2161
attnaaacta atctgctatt aagaaattca gaagttgatc tctgttatta attggatttg 2221
tcctgaatta ctccgtggtg acgctgaaca actcaagaat acatgggcgtg tgcttggcag 2281
cccctccccca tccctccac caccaccacc cccaccccca caaggcccta taccttctga 2341
cctgtgagcc ctgaagctat tttaaggact tctgttgc catacccgat agtagctcca 2401
ctaaaccatg atttctggat gtctgtgtct tagacctgcc aacagcta at aagaacaatg 2461
tataaatatg tcagcttgca ttttaatatgtgtgaatgtgtttgtcgtgtgttcgt 2521
aattaaaaag aaaacgggca gtaaccctct tctatataag cattagttaa tattaaggga 2581
aatcaaacaa atctaagccaa atactccaa caagcaagtt agatcttact tctgtctg 2641
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ttagtataca tccatctgtt tagtcatcaa ggttttagt tcacttaaaa aaaaataaac 2761
caactagacat cttttgtga atgtcaaata gtcacagtct aagtagccaa aaagtcaaag 2821
cgtgttaaac attgccaat gaaggaaagg gtgagctgca aaggggatgg ttcgaggttc 2881
attccagttg tgaccggcgtc gtccccaaa cctggatgc aaagacagtg attctgcata 2941
tggctggaa agacaggaaa gccagtctcc tacaaaggaa aatggaagat cctggctct 3001
aagtcataga ccaaagtctg ctgtag 3027

<210> 11
<211> 560
<212> PRT
<213> Mus musculus

<400> 11
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1 5 10 15
Gly Leu Thr Ala Ile Ala Ser Ala Pro Gly Ser Glu Thr Arg His Ser
20 25 30
Pro Lys Arg Glu Glu Gln Leu Arg Glu Lys Arg Ala Gly Leu Pro Asp
35 40 45
Arg His Arg Arg Pro Ile Pro Ala Arg Ser Arg Leu Val Met Leu Pro
50 55 60
Lys Val Glu Thr Glu Ala Pro Gly Leu Val Arg Ser His Gly Glu Gln
65 70 75 80
Gly Gln Met Pro Glu Asn Met Gln Val Ser Gln Phe Lys Met Val Asn
85 90 95
Tyr Ser Tyr Asp Glu Asp Leu Glu Leu Cys Pro Val Cys Gly Asp
100 105 110
Lys Val Ser Gly Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser Cys Lys
115 120 125
Gly Phe Phe Lys Arg Thr Val Gln Asn Gln Lys Arg Tyr Thr Cys Ile
130 135 140
Glu Asn Gln Asn Cys Gln Ile Asp Lys Thr Gln Arg Lys Arg Cys Pro
145 150 155 160
Tyr Cys Arg Phe Lys Lys Cys Ile Asp Val Gly Met Lys Leu Glu Ala
165 170 175
Val Arg Ala Asp Arg Met Arg Gly Gly Arg Asn Lys Phe Gly Pro Met
180 185 190
Tyr Lys Arg Asp Arg Ala Leu Lys Gln Gln Lys Ala Leu Ile Arg
195 200 205
Ala Asn Gly Leu Lys Leu Glu Ala Met Ser Gln Val Ile Gln Ala Met
210 215 220
Pro Ser Asp Leu Thr Ser Ala Ile Gln Asn Ile His Ser Ala Ser Lys

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| 225 | 230 | 235 | 240 |
| Gly Leu Pro Leu Ser His Val Ala Leu Pro Pro Thr Asp Tyr Asp Arg | | | |
| 245 | 250 | 255 | |
| Ser Pro Phe Val Thr Ser Pro Ile Ser Met Thr Met Pro Pro His Ser | | | |
| 260 | 265 | 270 | |
| Ser Leu His Gly Tyr Gln Pro Tyr Gly His Phe Pro Ser Arg Ala Ile | | | |
| 275 | 280 | 285 | |
| Lys Ser Glu Tyr Pro Asp Pro Tyr Ser Ser Ser Pro Glu Ser Met Met | | | |
| 290 | 295 | 300 | |
| Gly Tyr Ser Tyr Met Asp Gly Tyr Gln Thr Asn Ser Pro Ala Ser Ile | | | |
| 305 | 310 | 315 | 320 |
| Pro His Leu Ile Leu Glu Leu Leu Lys Cys Glu Pro Asp Glu Pro Gln | | | |
| 325 | 330 | 335 | |
| Val Gln Ala Lys Ile Met Ala Tyr Leu Gln Gln Glu Gln Ser Asn Arg | | | |
| 340 | 345 | 350 | |
| Asn Arg Gln Glu Lys Leu Ser Ala Phe Gly Leu Leu Cys Lys Met Ala | | | |
| 355 | 360 | 365 | |
| Asp Gln Thr Leu Phe Ser Ile Val Glu Trp Ala Arg Ser Ser Ile Phe | | | |
| 370 | 375 | 380 | |
| Phe Arg Glu Leu Lys Val Asp Asp Gln Met Lys Leu Leu Gln Asn Cys | | | |
| 385 | 390 | 395 | 400 |
| Trp Ser Glu Leu Leu Ile Leu Asp His Ile Tyr Arg Gln Val Ala His | | | |
| 405 | 410 | 415 | |
| Gly Lys Glu Gly Thr Ile Phe Leu Val Thr Gly Glu His Val Asp Tyr | | | |
| 420 | 425 | 430 | |
| Ser Thr Ile Ile Ser His Thr Glu Val Ala Phe Asn Asn Leu Leu Ser | | | |
| 435 | 440 | 445 | |
| Leu Ala Gln Glu Leu Val Val Arg Leu Arg Ser Leu Gln Phe Asp Gln | | | |
| 450 | 455 | 460 | |
| Arg Glu Phe Val Cys Leu Lys Phe Leu Val Leu Phe Ser Ser Asp Val | | | |
| 465 | 470 | 475 | 480 |
| Lys Asn Leu Glu Asn Leu Gln Leu Val Glu Gly Val Gln Glu Gln Val | | | |
| 485 | 490 | 495 | |
| Asn Ala Ala Leu Leu Asp Tyr Thr Val Cys Asn Tyr Pro Gln Gln Thr | | | |
| 500 | 505 | 510 | |
| Glu Lys Phe Gly Gln Leu Leu Leu Arg Leu Pro Glu Ile Arg Ala Ile | | | |
| 515 | 520 | 525 | |
| Ser Lys Gln Ala Glu Asp Tyr Leu Tyr Tyr Lys His Val Asn Gly Asp | | | |
| 530 | 535 | 540 | |
| Val Pro Tyr Asn Asn Leu Leu Ile Glu Met Leu His Ala Lys Arg Ala | | | |
| 545 | 550 | 555 | 560 |

<210> 12
<211> 2482
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (56) ... (1543)

<400> 12

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Met
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Ser Ser Asn Ser Asp Thr Gly Asp Leu Gln Glu Ser Leu Lys His Gly
5 10 15

ctt aca cct att gtg tct caa ttt aaa atg gtg aat tac tcc tat gat 154
Leu Thr Pro Ile Val Ser Gln Phe Lys Met Val Asn Tyr Ser Tyr Asp
20 25 30

gaa gat ctg gaa gag ctt tgt ccc gtg tgt gga gat aaa gtg tct ggg 202
Glu Asp Leu Glu Leu Cys Pro Val Cys Gly Asp Lys Val Ser Gly
35 40 45

tac cat tat ggg ctc ctc acc tgt gaa agc tgc aag gga ttt ttt aag 250
Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser Cys Lys Gly Phe Phe Lys
50 55 60 65

cga aca gtc caa aat aat aaa agg tac aca tgt ata gaa aac cag aac 298
Arg Thr Val Gln Asn Asn Lys Arg Tyr Thr Cys Ile Glu Asn Gln Asn
70 75 80

tgc caa att gac aaa aca cag aga aag cgt tgt cct tac tgt cgt ttt 346
Cys Gln Ile Asp Lys Thr Gln Arg Lys Arg Cys Pro Tyr Cys Arg Phe
85 90 95

caa aaa tgt cta agt gtt gga atg aag cta gaa gct gta agg gcc gac 394
Gln Lys Cys Leu Ser Val Gly Met Lys Leu Glu Ala Val Arg Ala Asp
100 105 110

cga atg cgt gga gga agg aat aag ttt ggg cca atg tac aag aga gac 442
Arg Met Arg Gly Arg Asn Lys Phe Gly Pro Met Tyr Lys Arg Asp
115 120 125

agg gcc ctg aag caa cag aaa aaa gcc ctc atc cga gcc aat gga ctt 490
Arg Ala Leu Lys Gln Gln Lys Ala Leu Ile Arg Ala Asn Gly Leu
130 135 140 145

aag cta gaa gcc atg tct cag gtg atc caa gct atg ccc tct gac ctg 538
Lys Leu Glu Ala Met Ser Gln Val Ile Gln Ala Met Pro Ser Asp Leu
150 155 160

acc att tcc tct gca att caa aac atc cac tct gcc tcc aaa ggc cta 586
Thr Ile Ser Ser Ala Ile Gln Asn Ile His Ser Ala Ser Lys Gly Leu
165 170 175

cct ctg aac cat gct gcc ttg cct cct aca gac tat gac aga agt ccc 634
Pro Leu Asn His Ala Ala Leu Pro Pro Thr Asp Tyr Asp Arg Ser Pro
180 185 190

ttt gta aca tcc ccc att agc atg aca atg ccc cct cac ggc agc ctg 682

Phe Val Thr Ser Pro Ile Ser Met Thr Met Pro Pro His Gly Ser Leu
195 200 205

caa ggt tac caa aca tat ggc cac ttt cct agc cg^g gcc atc aag tct 730
Gln Gly Tyr Gln Thr Tyr Gly His Phe Pro Ser Arg Ala Ile Lys Ser
210 215 220 225

gag tac cca gac ccc tat acc agc tca ccc gag tcc ata atg ggc tat 778
Glu Tyr Pro Asp Pro Tyr Thr Ser Ser Pro Glu Ser Ile Met Gly Tyr
230 235 240

tca tat atg gat agt tac cag acg agc tct cca gca agc atc cca cat 826
Ser Tyr Met Asp Ser Tyr Gln Thr Ser Ser Pro Ala Ser Ile Pro His
245 250 255

ctg ata ctg gaa ctt ttg aag tgt gag cca gat gag cct caa gtc cag 874
Leu Ile Leu Glu Leu Lys Cys Glu Pro Asp Glu Pro Gln Val Gln
260 265 270

gct aaa atc atg gcc tat ttg cag caa gag cag gct aac cga agc aag 922
Ala Lys Ile Met Ala Tyr Leu Gln Glu Gln Ala Asn Arg Ser Lys
275 280 285

cac gaa aag ctg agc acc ttt ggg ctt atg tgc aaa atg gca gat caa 970
His Glu Lys Leu Ser Thr Phe Gly Leu Met Cys Lys Met Ala Asp Gln
290 295 300 305

act ctc ttc tcc att gtc gag tgg gcc agg agt agt atc ttc ttc aga 1018
Thr Leu Phe Ser Ile Val Glu Trp Ala Arg Ser Ser Ile Phe Phe Arg
310 315 320

gaa ctt aag gtt gat gac caa atg aag ctg ctt cag aac tgc tgg agt 1066
Glu Leu Lys Val Asp Asp Gln Met Lys Leu Leu Gln Asn Cys Trp Ser
325 330 335

gag ctc tta atc ctc gac cac att tac cga caa gtg gta cat gga aag 1114
Glu Leu Ile Leu Asp His Ile Tyr Arg Gln Val Val His Gly Lys
340 345 350

gaa gga tcc atc ttc ctg gtt act ggg caa caa gtg gac tat tcc ata 1162
Glu Gly Ser Ile Phe Leu Val Thr Gly Gln Gln Val Asp Tyr Ser Ile
355 360 365

ata gca tca caa gcc gga gcc acc ctc aac aac ctc atg agt cat gca 1210
Ile Ala Ser Gln Ala Gly Ala Thr Leu Asn Asn Leu Met Ser His Ala
370 375 380 385

cag gag tta gtg gca aaa ctt cgt tct ctc cag ttt gat caa cga gag 1258
Gln Glu Leu Val Ala Lys Leu Arg Ser Leu Gln Phe Asp Gln Arg Glu
390 395 400

ttc gta tgt ctg aaa ttc ttg gtg ctc ttt agt tta gat gtc aaa aac 1306
Phe Val Cys Leu Lys Phe Leu Val Leu Phe Ser Leu Asp Val Lys Asn

405

410

415

ctt gaa aac ttc cag ctg gta gaa ggt gtc cag gaa caa gtc aat gcc 1354
Leu Glu Asn Phe Gln Leu Val Glu Gly Val Gln Glu Gln Val Asn Ala
420 425 430

gcc ctg ctg gac tac aca atg tgt aac tac ccg cag cag aca gag aaa 1402
Ala Leu Leu Asp Tyr Thr Met Cys Asn Tyr Pro Gln Gln Thr Glu Lys
435 440 445

ttt gga cag cta ctt ctt cga cta ccc gaa atc ccg gcc atc agt atg 1450
Phe Gly Gln Leu Leu Arg Leu Pro Glu Ile Arg Ala Ile Ser Met
450 455 460 465

cag gct gaa gaa tac ctc tac tac aag cac ctg aac ggg gat gtg ccc 1498
Gln Ala Glu Glu Tyr Leu Tyr Lys His Leu Asn Gly Asp Val Pro
470 475 480

tat aat aac ctt ctc att gaa atg ttg cat gcc aaa aga gca taa 1543
Tyr Asn Asn Leu Leu Ile Glu Met Leu His Ala Lys Arg Ala *
485 490 495

gttacaaccc ctaggagctc tgctttcaaa acaaaaagag attgggggag tggggagggg 1603
gaagaagaac aggaagaaaa aaagtactct gaactgctcc aagcaacgct aattaaaaac 1663
ttgcttaaaa gatattgaat taaaaaagc ataataatca aatacttaat agcaaataaa 1723
tgatgtatca gggtatgtt attgcaaact gtgaatcaaa ggcttcacag ccccgagga 1783
ttccatataa aagacattgt aaggagtgga ttgaactcac agatggatac caacacggc 1843
agaagaaaaa cggacagaac ggttcttgc tattaaactg atctccacta tgaagaaatt 1903
taggaactaa tcttgttaat taggcttata cagcgggga tttgagctt caggattcct 1963
ccatggtaaa gctgaactga aacaattctc aagaatgcat cagctgtacc tacaatagcc 2023
cctccctctt ccttgcagg cccgagcac tctgccctgt ggtcaccgaa tctgtactaa 2083
ggacctgtgt tcagccacac cagtggttagc tccaccaat catgaacagc ctaatttgag 2143
tgtctgtgtc ttagacctgc aaacagctaa taggaaattc tattaatatg ttagcttgcc 2203
attttaataa tggcttgagg gttgtttgt ctcgtttca tgatgttaag aaaatgcagg 2263
cagtatccct catcttatgt aagtgtgaat taatattaag ggaaatgact acaaacttgc 2323
aaagcaaatg ctccatagct aaagcaactt agaccattt tctgctactg ttgctgaaat 2383
gtggctttgg cattgttggc tttcataaaa aattctggc aggaagtctt gtttagtatac 2443
atcagtctt ttcatcatcc aagttttagt ttcatttaa 2482

<210> 13

<211> 495

<212> PRT

<213> Homo sapiens

<400> 13

Met Ser Ser Asn Ser Asp Thr Gly Asp Leu Gln Glu Ser Leu Lys His
1 5 10 15
Gly Leu Thr Pro Ile Val Ser Gln Phe Lys Met Val Asn Tyr Ser Tyr
20 25 30
Asp Glu Asp Leu Glu Leu Cys Pro Val Cys Gly Asp Lys Val Ser
35 40 45
Gly Tyr His Tyr Gly Leu Leu Thr Cys Glu Ser Cys Lys Gly Phe Phe
50 55 60

Lys Arg Thr Val Gln Asn Asn Lys Arg Tyr Thr Cys Ile Glu Asn Gln
65 70 75 80
Asn Cys Gln Ile Asp Lys Thr Gln Arg Lys Arg Cys Pro Tyr Cys Arg
85 90 95
Phe Gln Lys Cys Leu Ser Val Gly Met Lys Leu Glu Ala Val Arg Ala
100 105 110
Asp Arg Met Arg Gly Gly Arg Asn Lys Phe Gly Pro Met Tyr Lys Arg
115 120 125
Asp Arg Ala Leu Lys Gln Gln Lys Lys Ala Leu Ile Arg Ala Asn Gly
130 135 140
Leu Lys Leu Glu Ala Met Ser Gln Val Ile Gln Ala Met Pro Ser Asp
145 150 155 160
Leu Thr Ile Ser Ser Ala Ile Gln Asn Ile His Ser Ala Ser Lys Gly
165 170 175
Leu Pro Leu Asn His Ala Ala Leu Pro Pro Thr Asp Tyr Asp Arg Ser
180 185 190
Pro Phe Val Thr Ser Pro Ile Ser Met Thr Met Pro Pro His Gly Ser
195 200 205
Leu Gln Gly Tyr Gln Thr Tyr Gly His Phe Pro Ser Arg Ala Ile Lys
210 215 220
Ser Glu Tyr Pro Asp Pro Tyr Thr Ser Ser Pro Glu Ser Ile Met Gly
225 230 235 240
Tyr Ser Tyr Met Asp Ser Tyr Gln Thr Ser Ser Pro Ala Ser Ile Pro
245 250 255
His Leu Ile Leu Glu Leu Leu Lys Cys Glu Pro Asp Glu Pro Gln Val
260 265 270
Gln Ala Lys Ile Met Ala Tyr Leu Gln Gln Glu Gln Ala Asn Arg Ser
275 280 285
Lys His Glu Lys Leu Ser Thr Phe Gly Leu Met Cys Lys Met Ala Asp
290 295 300
Gln Thr Leu Phe Ser Ile Val Glu Trp Ala Arg Ser Ser Ile Phe Phe
305 310 315 320
Arg Glu Leu Lys Val Asp Asp Gln Met Lys Leu Leu Gln Asn Cys Trp
325 330 335
Ser Glu Leu Ile Leu Asp His Ile Tyr Arg Gln Val Val His Gly
340 345 350
Lys Glu Gly Ser Ile Phe Leu Val Thr Gly Gln Gln Val Asp Tyr Ser
355 360 365
Ile Ile Ala Ser Gln Ala Gly Ala Thr Leu Asn Asn Leu Met Ser His
370 375 380
Ala Gln Glu Leu Val Ala Lys Leu Arg Ser Leu Gln Phe Asp Gln Arg
385 390 395 400
Glu Phe Val Cys Leu Lys Phe Leu Val Leu Phe Ser Leu Asp Val Lys
405 410 415
Asn Leu Glu Asn Phe Gln Leu Val Glu Gly Val Gln Glu Gln Val Asn
420 425 430
Ala Ala Leu Leu Asp Tyr Thr Met Cys Asn Tyr Pro Gln Gln Thr Glu
435 440 445
Lys Phe Gly Gln Leu Leu Leu Arg Leu Pro Glu Ile Arg Ala Ile Ser
450 455 460
Met Gln Ala Glu Glu Tyr Leu Tyr Tyr Lys His Leu Asn Gly Asp Val
465 470 475 480
Pro Tyr Asn Asn Leu Leu Ile Glu Met Leu His Ala Lys Arg Ala

485

490

495

<210> 14
<211> 735
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic variant

<221> CDS
<222> (1)...(735)

<400> 14

tca gga ggg ccc aat gta cca gag ctc ata ttg cag ctg ctg caa cta 48
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Gln Leu
1 5 10 15

gag cca gag gag gac cag gtg cgc gct cgc atc gtg ggc tgt ctg cag 96
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30

gag cca gcc aaa agc cgc tct gac cag cca gcg ccc ttc agc ctc ctc 144
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu
35 40 45

tcg cga atg gcc gac cag acc ttt atc tcc att gtc gac tgg gca cga 192
Ser Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg
50 55 60

agg tgc atg gtc ttt aag gag ctg gag gtg gct gac cag atg aca ctg 240
Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu
65 70 75 80

ctg caa aac tct tgg agc gag ctg ctg gtg ttg gac cac atc tac cgc 288
Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg
85 90 95

cag gtc cag tac ggc aag gaa gac agc atc ctg ctg qtt act gga cag 336
Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln
100 105 110

gag gtg gag ctg agc aca gtg gct gtg cag gct ggc tcc ctg ctg cac 384
Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His
115 120 125

agc ctg gtg ctg cgg gcc caa gag tta gtg ctc cag ttg cat gca ctg 432
Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu
130 135 140

cag ctg gac cgc cag gag ttc gtc tgt ctc aag ttc ctc atc ctc ttc 480
Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe

| | | | | |
|-----------------------------------------------------------------------------|-----|-----|-----|-----|
| 145 | 150 | 155 | 160 | |
| agc ctc gat gtg aaa ttc ctg aac aac cac agc ctc gta aag gac gcc | | | | 528 |
| Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | | | | |
| 165 | 170 | 175 | | |
| cag gaa aag gcc aac gct gcc ctg ttg gat tac acc ttg tgt cac tac | | | | 576 |
| Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr | | | | |
| 180 | 185 | 190 | | |
| cca cac tgc ggg gac aaa ttc cag cag ttg cta ttg tcg ctg gtg gag | | | | 624 |
| Pro His Cys Gly Asp Lys Phe Gln Gln Leu Leu Leu Ser Leu Val Glu | | | | |
| 195 | 200 | 205 | | |
| gtg cg ^g gcc ctg agc atg cag gcc aag gag tac ctg tac cac aag cat | | | | 672 |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | | | |
| 210 | 215 | 220 | | |
| ttg ggc aac gag atg ccc cgc aac aac ctt ctc att gag atg ctg cag | | | | 720 |
| Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | | | | |
| 225 | 230 | 235 | 240 | |
| gcc aag cag act tga | | | | 735 |
| Ala Lys Gln Thr * | | | | |

<210> 15
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic variant

<400> 15
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu
1 5 10 15
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu
35 40 45
Ser Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg
50 55 60
Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu
65 70 75 80
Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg
85 90 95
Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln
100 105 110
Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His
115 120 125
Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu

| | | |
|-----------------------------------------------------------------|-----|-----|
| 130 | 135 | 140 |
| Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe | | |
| 145 | 150 | 155 |
| Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | | 160 |
| 165 | 170 | 175 |
| Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr | | |
| 180 | 185 | 190 |
| Pro His Cys Gly Asp Lys Phe Gln Gln Leu Leu Leu Ser Leu Val Glu | | |
| 195 | 200 | 205 |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | |
| 210 | 215 | 220 |
| Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | | |
| 225 | 230 | 235 |
| Ala Lys Gln Thr | | 240 |

<210> 16
<211> 735
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic variant

<221> CDS
<222> (1) ... (735)

<400> 16
tca gga ggg ccc aat gta cca gag ctc ata ttg cag ctg ctg caa cta 48
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu
1 5 10 15

gag cca gag gag gac cag gtg cgcc gct cgc atc gtg ggc tgt ctg cag 96
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30

gag cca gcc aaa agc cgc tct gac cag cca gcg ccc ttc agc ctc ctc 144
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu
35 40 45

tgc aga atg gcc gac cag acc ttt atc tcc att gtc gac tgg gca cga 192
Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg
50 55 60

agg tgc atg gtc ttt aag gag ctg gag gtg gct gac cag atg aca ctg 240
Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu
65 70 75 80

ctg caa aac tct tgg agc gag ctg ctg gtg ttg gac cac atc tac cgc 288
Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg
85 90 95

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| cag gtc cag tac ggc aag gaa gac agc atc ctg ctg gtt act gga cag | 336 | | |
| Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln | | | |
| 100 | 105 | 110 | |
| gag gtg gag ctg agc aca gtg gct gtg cag gct ggc tcc ctg ctg cac | 384 | | |
| Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His | | | |
| 115 | 120 | 125 | |
| agc ctg gtg ctg cgg gcc caa gag tta gtg ctc cag ttg cat gca ctg | 432 | | |
| Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu | | | |
| 130 | 135 | 140 | |
| cag ctg gac cgc cag gag ttc gtc tgt ctc aag ttc ctc atc ctc ttc | 480 | | |
| Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe | | | |
| 145 | 150 | 155 | 160 |
| agc ctc gat gtg aaa ttc ctg aac aac cac agc ctc gta aag gac gcc | 528 | | |
| Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | | | |
| 165 | 170 | 175 | |
| cag gaa aag gcc aac gct gcc ctg ttg gat tac acc ttg tgt cac tac | 576 | | |
| Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr | | | |
| 180 | 185 | 190 | |
| cca cac tgc ggg gac aaa ttc cag cag ttg cta ttg tcg ctg gtg gag | 624 | | |
| Pro His Cys Gly Asp Lys Phe Gln Gln Leu Leu Leu Ser Leu Val Glu | | | |
| 195 | 200 | 205 | |
| gtg cgg gcc ctg agc atg cag gcc aag gag tac ctg tac cac aag cat | 672 | | |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | | |
| 210 | 215 | 220 | |
| ttg ggc aac gag atg ccc cgc aac aac ctt ctc att gag atg ctg cag | 720 | | |
| Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | | | |
| 225 | 230 | 235 | 240 |
| gcc aag cag act tga | 735 | | |
| Ala Lys Gln Thr * | | | |

<210> 17
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic variant

<400> 17
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu
1 5 10 15
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln

| | | |
|-----------------------------------------------------------------|-----|-----|
| 20 | 25 | 30 |
| Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu | | |
| 35 | 40 | 45 |
| Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg | | |
| 50 | 55 | 60 |
| Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu | | |
| 65 | 70 | 75 |
| Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg | | |
| 85 | 90 | 95 |
| Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln | | |
| 100 | 105 | 110 |
| Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His | | |
| 115 | 120 | 125 |
| Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu | | |
| 130 | 135 | 140 |
| Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe | | |
| 145 | 150 | 155 |
| Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | | |
| 165 | 170 | 175 |
| Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Cys His Tyr | | |
| 180 | 185 | 190 |
| Pro His Cys Gly Asp Lys Phe Gln Gln Leu Leu Ser Leu Val Glu | | |
| 195 | 200 | 205 |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | |
| 210 | 215 | 220 |
| Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | | |
| 225 | 230 | 235 |
| Ala Lys Gln Thr | | 240 |

<210> 18
<211> 735
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic variant

<221> CDS
<222> (1) ... (735)

<400> 18
tca gga ggg ccc aat gta cca gag ctc ata ttg cag ctg ctg caa cta 48
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu
1 5 10 15

gag cca gag gag gac cag gtg cgc gct cgc atc gtg ggc tgt ctg cag 96
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30

gag cca gcc aaa agc cgc tct gac cag cca gcg ccc ttc agc ctc ctc 144
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu

| | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|
| 35 | 40 | 45 | |
| tgc aga atg gcc gac cag acc ttt atc tcc att gtc gac tgg gca cga Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg | 50 | 55 | 60 |
| agg tgc atg gtc ttt aag gag ctg gag gtg gct gac cag atg aca ctg Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu | 65 | 70 | 75 |
| ctg cag aac tgt tgg agc gag ctg ctg gtg ttg gac cac atc tac cgc Leu Gln Asn Cys Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg | 85 | 90 | 95 |
| cag gtc cag tac ggc aag gaa gac agc atc ctg ctg gtt act gga cag Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln | 100 | 105 | 110 |
| gag gtg gag ctg agc aca gtg gct gtg cag gct ggc tcc ctg ctg cac Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His | 115 | 120 | 125 |
| agc ctg gtg ctg cgg gcc caa gag tta gtg ctc cag ttg cat gca ctg Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu | 130 | 135 | 140 |
| cag ctg gac cgc cag gag ttc gtc tgt ctc aag ttc ctc atc ctc ttc Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe | 145 | 150 | 155 |
| agc ctc gat gtg aaa ttc ctg aac aac cac agc ctc gta aag gac gcc Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | 165 | 170 | 175 |
| cag gaa aag gcc aac gct gcc ctg ttg gat tac acc ttg agc cac tac Gln Glu Lys Ala Asn Ala Leu Leu Asp Tyr Thr Leu Ser His Tyr | 180 | 185 | 190 |
| cca cac tcc ggg gac aaa ttc cag cag ttg cta ttg tgc ctg gtg gag Pro His Ser Gly Asp Lys Phe Gln Gln Leu Leu Leu Cys Leu Val Glu | 195 | 200 | 205 |
| gtg cg _g gcc ctg agc atg cag gcc aag gag tac ctg tac cac aag cat Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | 210 | 215 | 220 |
| ttg ggc aac gag atg ccc cgc aac aac ctt ctc att gag atg ctg cag Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | 225 | 230 | 235 |
| gcc aag cag act tga Ala Lys Gln Thr * | | | 720 |
| | | | 735 |

<210> 19
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic variant

<400> 19
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu
1 5 10 15
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu
35 40 45
Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg
50 55 60
Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu
65 70 75 80
Leu Gln Asn Cys Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg
85 90 95
Gln Val Gln Tyr Gly Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln
100 105 110
Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His
115 120 125
Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu
130 135 140
Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe
145 150 155 160
Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala
165 170 175
Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Ser His Tyr
180 185 190
Pro His Ser Gly Asp Lys Phe Gln Gln Leu Leu Leu Cys Leu Val Glu
195 200 205
Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His
210 215 220
Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln
225 230 235 240
Ala Lys Gln Thr

<210> 20
<211> 735
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic variant

<221> CDS

<222> (1)...(735)

<400> 20

tca gga ggg ccc aat gta cca gag ctc ata ttg cag ctg ctg caa cta 48
Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Gln Leu
1 5 10 15

gag cca gag gag gac cag gtg cgc gct cgc atc gtg ggc tgt ctg cag 96
Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln
20 25 30

gag cca gcc aaa agc cgc tct gac cag cca gcg ccc ttc agc ctc ctc 144
Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu
35 40 45

tgc aga atg gcc gac cag acc ttt atc tcc att gtc gac tgg gca cga 192
Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg
50 55 60

agg tgc atg gtc ttt aag gag ctg gag gtg gct gac cag atg aca ctg 240
Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu
65 70 75 80

ctg caa aac tct tgg agc gag ctg ctg gtg ttg gac cac atc tac cgc 288
Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg
85 90 95

cag gtc cag tac ggc aag gaa gac agc atc ctg ctg gtt act gga cag 336
Gln Val Gln Tyr Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln
100 105 110

gag gtg gag ctg agc aca gtg gct gtg cag gct ggc tcc ctg ctg cac 384
Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His
115 120 125

agc ctg gtg ctg cgg gcc caa gag tta gtg ctc cag ttg cat gca ctg 432
Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu
130 135 140

cag ctg gac cgc cag gag ttc gtc tgt ctc aag ttc ctc atc ctc ttc 480
Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe
145 150 155 160

agc ctc gat gtg aaa ttc ctg aac aac cac agc ctc gta aag gac gcc 528
Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala
165 170 175

cag gaa aag gcc aac gct gcc ctg ttg gat tac acc ttg agc cac tac 576
Gln Glu Lys Ala Asn Ala Leu Leu Asp Tyr Thr Leu Ser His Tyr
180 185 190

cca cac tcc ggg gac aaa ttc cag cag ttg cta ttg tcg ctg gtg gag 624

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Pro His Ser Gly Asp Lys Phe Gln Gln Leu Leu Leu Ser Leu Val Glu | | | |
| 195 | 200 | 205 | |
| gtg cgg gcc ctg agc atg cag gcc aag gag tac ctg tac cac aag cat | | | 672 |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | | |
| 210 | 215 | 220 | |
| ttg ggc aac gag atg ccc cgc aac aac ctt ctc att gag atg ctg cag | | | 720 |
| Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln | | | |
| 225 | 230 | 235 | 240 |
| gcc aag cag act tga | | | 735 |
| Ala Lys Gln Thr * | | | |

<210> 21
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic variant

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Ser Gly Gly Pro Asn Val Pro Glu Leu Ile Leu Gln Leu Leu Gln Leu | | | |
| 1 | 5 | 10 | 15 |
| Glu Pro Glu Glu Asp Gln Val Arg Ala Arg Ile Val Gly Cys Leu Gln | | | |
| 20 | 25 | 30 | |
| Glu Pro Ala Lys Ser Arg Ser Asp Gln Pro Ala Pro Phe Ser Leu Leu | | | |
| 35 | 40 | 45 | |
| Cys Arg Met Ala Asp Gln Thr Phe Ile Ser Ile Val Asp Trp Ala Arg | | | |
| 50 | 55 | 60 | |
| Arg Cys Met Val Phe Lys Glu Leu Glu Val Ala Asp Gln Met Thr Leu | | | |
| 65 | 70 | 75 | 80 |
| Leu Gln Asn Ser Trp Ser Glu Leu Leu Val Leu Asp His Ile Tyr Arg | | | |
| 85 | 90 | 95 | |
| Gln Val Gln Tyr Lys Glu Asp Ser Ile Leu Leu Val Thr Gly Gln | | | |
| 100 | 105 | 110 | |
| Glu Val Glu Leu Ser Thr Val Ala Val Gln Ala Gly Ser Leu Leu His | | | |
| 115 | 120 | 125 | |
| Ser Leu Val Leu Arg Ala Gln Glu Leu Val Leu Gln Leu His Ala Leu | | | |
| 130 | 135 | 140 | |
| Gln Leu Asp Arg Gln Glu Phe Val Cys Leu Lys Phe Leu Ile Leu Phe | | | |
| 145 | 150 | 155 | 160 |
| Ser Leu Asp Val Lys Phe Leu Asn Asn His Ser Leu Val Lys Asp Ala | | | |
| 165 | 170 | 175 | |
| Gln Glu Lys Ala Asn Ala Ala Leu Leu Asp Tyr Thr Leu Ser His Tyr | | | |
| 180 | 185 | 190 | |
| Pro His Ser Gly Asp Lys Phe Gln Gln Leu Leu Leu Ser Leu Val Glu | | | |
| 195 | 200 | 205 | |
| Val Arg Ala Leu Ser Met Gln Ala Lys Glu Tyr Leu Tyr His Lys His | | | |
| 210 | 215 | 220 | |

Leu Gly Asn Glu Met Pro Arg Asn Asn Leu Leu Ile Glu Met Leu Gln
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Ala Lys Gln Thr

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